

(12) **United States Patent**  
**Johnson et al.**

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(54) **METHODS FOR MAINTAINING A  
FILTERING DEVICE WITHIN A LUMEN**

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2230/001; A61B 17/221; A61M 25/0021;  
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(71) Applicant: **Crux Biomedical, Inc.**, San Diego, CA  
(US)

(Continued)

(72) Inventors: **Eric Johnson**, Woodside, CA (US);  
**Thomas J. Fogarty**, Portola Valley, CA  
(US); **Frank Arko**, Plano, TX (US);  
**Jeff Elkins**, Woodside, CA (US);  
**Martin Seery**, San Rafael, CA (US)

(56)

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(73) Assignee: **CRUX BIOMEDICAL, INC.**, San  
Diego, CA (US)

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Johnson et al.; U.S. Appl. No. 14/574,203 entitled "Filter support  
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*Primary Examiner* — Katrina Stransky

(74) *Attorney, Agent, or Firm* — Thomas C. Meyers;  
Brown Rudnick LLP

(51) **Int. Cl.**  
**A61F 2/00** (2006.01)  
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(57)

**ABSTRACT**

In one embodiment of the present invention there is pro-  
vided a method of filtering blood flow in a lumen by  
positioning an open loop filter support structure within a  
lumen; maintaining a position of the open loop filter support  
structure within the lumen using radial force generated by  
the open loop filter support structure; and filtering blood  
flow in the lumen using a filter supported by the open loop  
filter support structure. In one aspect, there is also applying  
radial force generated by the open loop filter support struc-  
ture along the axial dimension of the lumen.

(52) **U.S. Cl.**  
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**24 Claims, 50 Drawing Sheets**

